

REMARKS

Claims 1, 3, 6, 8 and 10 are rejected under 35 USC 103(a) as being unpatentable over Ryu (US 6,295,386) in view of Horobin (US 7,106,477). Claims 4 and 5 are rejected under 335 USC 103(a) as being unpatentable over Ryu in view of Horobin as applied to claim 3, and further in view of Sato (US 5,245,440). Claim 7 is rejected under 35 USC 1-3)a_ as being unpatentable over Ryu in view of Horobin as applied to claim 1 and further in view of Lodwick (US 6,226,419). Claim 9 is rejected under 35 USC 103(a) as being unpatentable over Ryu in view of Horobin as applied to claim 8 and further in view of Fukuda (US 6,624,876). These rejections are respectfully traversed.

The Invention

The present invention is directed to a method and apparatus for the geometric calibrating of a feed through a scanner or transport scanner that is arranged for scanning a two-dimensional original and forming an electronic image for subsequent usage in an appropriate information handling system. The method and apparatus of the present invention analyzes the bit math image resulting from the test original, derives differences from the intended values and calculates correction values for the respective parameters. Upon correction of these parameters, the conversion process from the image on a page to the image in memory results in a true mapping, despite these differences.

The Prior Art

In paragraph 2 on page 3 of the Examiner's Office Action letter, the Examiner concurs with the Applicants' argument that the method disclosed in the Ryu reference only works for a limited class of scanners. In addition, the Examiner states that the Ryu reference discloses carrying out a correction each time that a document is scanned in. Thus, the Ryu reference fails to teach carrying out once, an all time correction of a parameter and also fails to teach a correction of a mechanical parameter. However, the Examiner points out that the above features are not recited in the rejected claims. In this connection, the Examiner will note that claims 1 and 10 have been amended as suggested by the Examiner. Thus, as previously argued by the

Applicants and presently recognized by the Examiner in his Office Action letter, the method disclosed in the Ryu reference is only operable for a limited class of scanners. Thus the scanner must be provided with a print head that makes the same movements as the scan head and, the conveyance of a document or a recordable sheet along the preceding direction (please see Fig. 6) has to be forward and backward. This is necessary, first, in order that the printed pattern has a number of lines that are really straight, which is obtained by moving the paper forward and backward when printing the pattern. Secondly, after the pattern has been printed, the paper is fed back so as to be able to scan it and to determine the image errors. Clearly, the method disclosed in the Ryu reference only works for a limited class of scanners. Consistent with this argument, claims 1 and 10 have been amended to provide limitations whereby the scan head does not move relative to the apparatus. Thus, the device parameters under consideration have now been limited to mechanical parameters, such as for example, scanning speed.

In addition, the Ryu reference discloses carrying out a correction each time that a document is scanned in. Thus, the Ryu reference fails to teach carrying out once, an all time correction of a parameter. This feature has been added to claims 1 and 10 of the present application, wherein said claims now recite that the correction action is carried out in continuation of the scanning of the test original and not each time before a normal scanning action, as is disclosed in the Ryu reference. Accordingly, it is believed that the present amendments made to claims 1 and 10 further distinguish the method and apparatus of the present invention from the Ryu reference.

In addition, the Examiner has recognized further deficiencies in the Ryu reference in failing to teach the utilization of a zoom factor in the transport direction, wherein the test original contains a leading edge and comprises two sides of at least one marking in known parallel displacement and parallel with the leading edge wherein the method comprises a correction value for the zoom factor based on the actual parallel displacement of the two sides in the document image. Accordingly, the Examiner has relied upon the Horobin reference in an attempt to fill these deficiencies. As discussed by the Applicants in the response to the Examiner's previous

Office Action letter, the Horobin reference discloses, in a digital copier, maintaining conformance of a copied image with an original image, particularly in the aspects of placement of the image relative to the edge of the print sheet, as well as magnification of the printed image relative to the original. The crux of the method disclosed in the Horobin reference is that a copy of a test chart is inspected by an operator with the reading derived from an inspection of the output sheet being entered into the copying machine. Subsequently, the copier adjusts at least one attribute. The chart is designed in such a way that numbers may be read out from the copy of the chart. Thus, from the teachings of the Horobin reference it is understandable that the reading out by a human being reflects a manual operation which is cumbersome, inaccurate and error-prone, despite the feature of providing a scale, as disclosed as element 102 in Fig. 2 of the reference. In utilizing the teachings of the Horobin reference, it should be realized that since a copy of a test chart is used, it is not possible to discriminate where any deviations that have to be corrected, originate, that is, in the scanner part or in the printer part. Accordingly, it is possible that a deviation originating in the printer path is corrected by correcting a parameter in the scanner path. This, of course, is detrimental to the good working of the apparatus as a whole, that is, compensating for an error in the apparatus by introducing another error on another location in the apparatus. Also, the method is not suitable for use for a scanner that is used for scanning to a file, since the method disclosed in the Horobin reference allows a deviation in the scanner path to be corrected by a compensation in the printer path. The image that will be stored in a file is then not compensated for. Thus, by using, in the Horobin reference, the copy path for the test chart in the resulting copy of the test chart, all deviations over the entire copy path (including the scanner path and the printer path) accumulate in the copy of the test chart. Since it is not determinable from where a certain deviation originates, this creates an intrinsic disadvantage of the method disclosed in the Horobin reference.

In any event, even if, for sake of argument, it would be possible to combine the references as suggested by the Examiner, in view of the amendments made to claims 1 and 10 which are not taught by the Horobin reference, it is believed that any possible combination of the Ryu and Horobin references could not possibly suggest the present invention. Furthermore, since the Sato, Lodwick and Fukuda patents also fail to provide the deficiencies present in both

the Ryu and Horobin references, the further reliance upon these references cannot possibly render obvious the Applicants' inventive contribution.

Accordingly, in view of the above amendments and remarks, reconsideration of the rejections and allowance of all of the claims of the present application are respectfully requested. In the event that the proposed Amendment does not place the present application into condition for allowance, entry thereof is respectfully requested as placing the present application into better condition for appeal.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Joseph A. Kolasch, Reg. No. 22,463, at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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